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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte BILLY G. MOON

Appeal 2009-010578
Application 09/864,750
Technology Center 2400

Before JOSEPH L. DIXON, LANCE LEONARD BARRY, and JOHN A. JEFFERY, *Administrative Patent Judges*.

JEFFERY, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant appeals under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 1-38. We have jurisdiction under 35 U.S.C. § 6(b). We affirm.

STATEMENT OF THE CASE

Appellant's invention registers mobile objects on a foreign network. In one aspect, the mobile object is moved from a home network to a foreign

network responsive to unavailable resources at the home network. *See generally* Abstract; Spec. 10-11. Claim 1 is illustrative:

> 1. A method for registering a mobile object with a foreign network, comprising:
>
> moving a mobile object from a home network to a foreign network in response to unavailable resources at the home network, the mobile object being computer language code operable to be executed by or executed on the home or foreign networks;
>
> executing the mobile object on a first virtual machine at a first router on the foreign network;
>
> generating a care-of-name for the mobile object at a foreign object agent located on the foreign network;
>
> communicating the care-of-name to a home object agent located on the home network; and
>
> generating a mobility binding for the mobile object at the home object agent, the mobility binding including the care-of-name.

The Examiner relies on the following as evidence of unpatentability:

Salminen	US 6,463,286 B1	Oct. 8, 2002 (filed July 30, 1999)
Jagannathan	US 6,496,871 B1	Dec. 17, 2002 (filed June 30, 1998)
Xu	US 6,738,362 B1	May 18, 2004 (filed July 16, 1999)

THE REJECTION

The Examiner rejected claims 1-38 under 35 U.S.C. § 103(a) as unpatentable over Xu, Salminen, and Jagannathan. Ans. 4-18.[1]

CONTENTIONS

Regarding representative claim 1, the Examiner finds that Xu discloses every recited feature except for moving mobile objects responsive to unavailable resources in the home network, where the mobile object is executable computer language code. Ans. 4-7, 19-27. The Examiner, however, cites (1) Salminen for teaching moving objects responsive to unavailable resources, and (2) Jagannathan for teaching that such objects can be executable code in concluding the claim would have been obvious. *Id.*

Appellant argues that there is no reason to combine the references as the Examiner proposes, nor would skilled artisans reasonably expect success from such a combination since, among other things, (1) the references are in different technical areas, and (2) modifying Xu's remote mobile communication system by allowing mobile object migration as the Examiner proposes would change Xu's principle of operation. App. Br. 9-13; Reply Br. 9-15. Appellant adds that even if the references were combinable, they still do not teach or suggest (1) moving a mobile object from a home network to a foreign network responsive to unavailable resources at the home network, and (2) executing the mobile object on a first virtual machine at a first router on the foreign network, where the mobile object is

[1] Throughout this opinion, we refer to (1) the Appeal Brief filed June 29, 2007; (2) the Examiner's Answer mailed October 9, 2007; and (3) the Reply Brief filed December 10, 2007.

executable computer language code as claimed. App. Br. 13-15; Reply Br. 15-18. The issues before us, then, are as follows:

ISSUES

1. Under § 103, has the Examiner erred in rejecting claim 1 by finding that Xu, Salminen, and Jagannathan collectively would have taught or suggested (1) moving a mobile object from a home network to a foreign network responsive to unavailable resources at the home network, and (2) executing the mobile object on a first virtual machine at a first router on the foreign network, where the mobile object is executable computer language code?

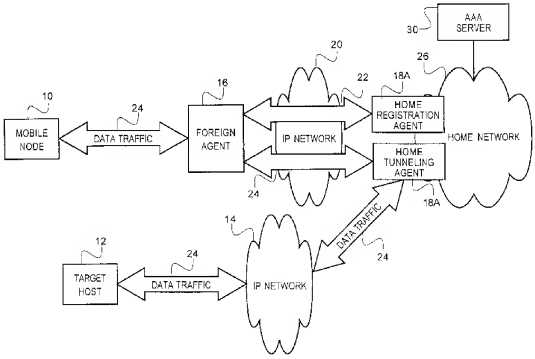
2. Is the Examiner's reason to combine the teachings of these references supported by articulated reasoning with some rational underpinning to justify the Examiner's obviousness conclusion?

This issue turns on whether (1) the Examiner's proposed combination of references impermissibly renders the prior art unsuitable for its intended purpose, and (2) skilled artisans would reasonably expect success from this combination.

FINDINGS OF FACT (FF)

1. Xu's system enables a mobile communications device (e.g., a laptop computer) to communicate with a host computer 12 on an Internet Protocol (IP) network via home and foreign agents which can be implemented in routers. To this end, the system includes mobile node 10 that communicates with a foreign agent 16. The system includes (1) a home registration agent 18A that registers mobile nodes, and (2) a home tunnelling

agent 18B[2] that handles all routing and tunnelling functions for the foreign agent and mobile node. The home registration agent tells the foreign agent where to tunnel data traffic by sending the home tunnelling agent's IP address to the foreign agent. The home tunnelling agent (1) receives traffic from the mobile node via the foreign agent, and (2) redirects the traffic to the destination (e.g., host computer 12). Xu, col. 1, ll. 47-49; col. 2, ll. 1-2; col. 5, l. 57 – col. 7, l. 23; Fig. 2. Xu's mobile IP networking system in Figure 2 is reproduced below:



Xu's mobile IP networking system in Figure 2

[2] Although Xu's Figure 2 labels the home tunneling agent with the numeral "18A," the patent's text nonetheless refers to this element with the numeral "18B." *See, e.g.,* Xu, col. 6, l. 37.

2. Xu's home registration agent is typically implemented as a machine (e.g., a general purpose computer loaded with a software program), and the home tunnelling agent should be a device that can perform many node tunnelling functions simultaneously (e.g., an IP router). Xu, col. 6, ll. 27-33, 42-48.

3. Multiple home tunnelling or registration agents can be implemented in the respective devices as multiple instantiations of a home registration agent or home tunnelling agent software program. Xu, Abstract.

4. Salminen's system provides temporary selective roaming at predetermined operation conditions (e.g., a network overload) in a mobile radio communication system. The system comprises first and second mobile radio communication networks, HPLMN and VPLMN, respectively. The networks have respective first and second switching means MSC/VLR, MSC/VLR' formed by associated mobile switching center/visitor location registers. When an overload condition occurs, the home network's first switching means sends a request message (RM) to the second network's second switching means requesting that the second network handle one or more mobile stations that cannot be handled by the first network. The second switching means then sends a response message (RPM) to the first switching means indicating whether the second network will grant access to those mobile stations. If so, the mobile stations are registered in the second network. Salminen, Abstract; col. 7, ll. 15-33; col. 8, l. 3 – col. 9, l. 35; col. 10, ll. 30-53; Figs. 1-2.

5. Jagannathan's distributed software system includes at least one agent 40 (i.e., a mobile software component) residing on multiple computer machines 10, where plural objects are contained within the agent's

protection domain such that different objects reside on different computers. Not only are the objects selectively movable among the computers, but the agent is mobile and may migrate to any other computer in the network to thus distribute the agent among one or more network computers. Jagannathan, Abstract; col. 8, l. 44 – col. 9, l. 12; col. 11, ll. 8-23; Fig. 1.

6. For systems where all machines have the same code image, process mobility (i.e., moving executing processes from one machine to another) may help performance by improving locality and load balancing. Moreover, enhanced process mobility allows computations to dynamically reconfigure themselves, taking advantage of improved data locality and reducing the number of initiated non-local communication events. Jagannathan, col. 1, ll. 29-48.

7. By distributing an agent's state, references to data within an agent do not require knowing the physical location where the data resides, thus enabling accessing objects within agents in a network-transparent manner. Moreover, such agents offer enhanced modularity and protection facilities by encapsulating tasks and data thus prohibiting other agents' transparently accessing those tasks and data. Jagannathan, col. 9, ll. 13-31.

PRINCIPLES OF LAW

If the Examiner's proposed modification renders the prior art unsatisfactory for its intended purpose, the Examiner has failed to make a prima facie case of obviousness. *See In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984).

"An obviousness determination requires that a skilled artisan would have perceived a reasonable expectation of success in making the invention

in light of the prior art." *Amgen, Inc. v. F. Hoffman-La Roche Ltd.*, 580 F.3d 1340, 1362 (Fed. Cir. 2009).

ANALYSIS

Based on the record before us, we find no error in the Examiner's obviousness rejection of representative claim 1 which calls for, in pertinent part, (1) moving a mobile object from a home network to a foreign network responsive to unavailable resources at the home network, and (2) executing the mobile object on a first virtual machine at a first router on the foreign network, where the mobile object is executable computer language code.

First, Xu routes data traffic from a mobile node to a target host on a foreign network via home and foreign agents. FF 1. The home agents include (1) a registration agent, and (2) a tunnelling agent that handles routing and tunnelling functions for the foreign agent and mobile node. *Id.* Although Xu is silent regarding moving code-based mobile objects between networks via this system, the Examiner cited Jagannathan to show that moving code-based objects between networked computers is well known in the art, and applying such a technique to Xu's system would have been obvious. Ans. 4-7, 19-25. We see no error in this reasoning, particularly since Xu not only routes "data traffic" between networks which does not preclude executable code, but Xu's networked agents are themselves software-based entities as the Examiner indicates. Ans. 21; FF 2-3. Since Jagannathan distributes software-based agents among different machines via a network to improve performance by, among other things, balance loads and enhance data locality (FF 5-7), we see no reason why such a technique could not be applied to various executable code elements in Xu's system

(e.g., the agents) to realize these advantages of a distributed system. That Xu contemplates multiple instances of agent software in respective devices as the Examiner indicates (Ans. 24; FF 3) only bolsters this conclusion. In any event, such an enhancement merely predictably uses prior art elements according to their established functions—an obvious improvement. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007).

And even assuming, without deciding, that this modification would necessitate tracking the various distributed agent functionalities as Appellant argues (Reply Br. 14), such a requirement may very well be offset by the advantages of a distributed system noted by Jagannathan. *See* FF 6-7. In short, weighing the relative advantages and disadvantages of distributing software-based entities in Xu in light of Jagannathan involves engineering tradeoffs well within the level of ordinarily skilled artisans.

Nor are we persuaded of error in the Examiner's reliance on Salminen (Ans. 5-6, 25-27) to merely show that triggering this executable object movement from one network to another responsive to determining that resources in the home network are unavailable would have been obvious. To be sure, Salminen transfers access and control of mobile stations from one network to another responsive to overload conditions, but does not specifically indicate that code-based objects are moved under these conditions. FF 4. Nevertheless, we see no reason why the fundamental notion of triggering such a transfer in the Xu/Jagannathan system responsive to determining that resources are unavailable as in Salminen would not have been obvious, particularly in view of the load-balancing benefits provided by such a distributed system as Jagannathan indicates. *See* FF 1-7.

We are also unpersuaded by Appellant's contention that the Examiner's proposed combination of references would impermissibly change Xu's principle of operation. App. Br. 10-11; Reply Br. 10-11. In short, there is no persuasive evidence on this record proving that distributing at least some of the executable code-based data and entities in Xu among different machines as suggested by Jagannathan would somehow render Xu incapable of performing its fundamental registration and data tunnelling functions. Nor has Appellant shown that this core functionality would be destroyed by triggering object movement responsive to detecting unavailable resources as suggested by Salminen. We also find no error in the Examiner's position (Ans. 19-21) that the cited references are analogous at least in the sense that they all pertain to networked computing devices.

We therefore find the Examiner's proposed combination of references to render claim 1 obvious does not impermissibly render the prior art unsuitable for its intended purpose, and (2) skilled artisans would reasonably expect success from this combination. Accordingly, we find the cited prior art at least suggests the disputed limitations of claim 1, and the Examiner's reason to combine the teachings of these references is supported by articulated reasoning with some rational underpinning to justify the Examiner's obviousness conclusion.

We are therefore not persuaded that the Examiner erred in rejecting representative claim 1, and claims 2-38 not separately argued with particularity.

CONCLUSION

The Examiner did not err in rejecting claims 1-38 under § 103.

ORDER

The Examiner's decision rejecting claims 1-38 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

llw